AMENDMENTS TO THE CLAIMS

Claims 1-103 (Canceled without prejudice or disclaimer).

104. A semiconductor device comprising:

(1) a semiconductor pellet of a quadrilateral shape having bonding pads formed in a main surface thereof, said semiconductor pellet having a first pair of opposed edges extending in a first direction and a second pair of opposed edges extending in a second direction which intersects with said first direction, said bonding pads being arranged in said first direction to form a row of bonding pads;

(2) a substrate having a first surface, a second surface opposite to said first surface, electrode pads formed on said second surface and slit passing through said substrate from said first surface to said second surface and extending in said first direction, said substrate including a glass fiber and resin, said semiconductor pellet being disposed on said first surface of said substrate such that said main surface of said semiconductor pellet is faced to said first surface of said substrate and said row of bonding pads is arranged in said slit in a plane view, said electrode pads including first electrode pads arranged at one side of said slit and second electrode pads arranged at other side of said slit in said second direction;

(3) bonding wires electrically connecting said electrode pads of said substrate with said bonding pads of said semiconductor pellet via said slit, said bonding wires including first bonding wires connected to said first electrode pads and second bonding wires connected to said second electrode pads;

(4) bump electrodes disposed on said second surface of said substrate and electrically connected to said electrode pads of said substrate, said bump electrodes including first bump electrodes electrically connected to said first electrode pads and second bump electrodes electrically connected to said second electrode pads, said bump electrodes being arranged on said second surface of said substrate such that some of said bump electrodes overlap with said semiconductor pellet in said plane view respectively; and

(5) a resin sealing body sealing the whole of each of said bonding wires and said main surface of said semiconductor pellet exposed from said slit,

(6) wherein a height of said bump electrodes is greater than a thickness of said resin sealing body from said second surface of said substrate toward a top of said bump electrode in a thickness direction of said semiconductor pellet.

105. The semiconductor device according to claim 104, wherein said row of bonding pads is disposed at a substantially central area between said first pair of opposed edges of said semiconductor pellet.

106. The semiconductor device according to claim 105, wherein said semiconductor pellet has a rectangular shape, and wherein said first pair of opposed edges are corresponding to a pair of longer edges and said second pair of opposed edges are corresponding to a pair of shorter edges.

107. The semiconductor device according to claim 104, wherein said slit is tapered so that opening on said second surface of substrate is greater than opening on said first surface of said substrate.

108. The semiconductor device according to claim 104, wherein said bump electrodes are formed of a Pb-Sn alloy.

109. A semiconductor device comprising:

(1) a semiconductor pellet of a quadrilateral shape having bonding pads formed in a main surface thereof, said semiconductor pellet having a first pair of opposed edges extending in a first direction and a second pair of opposed edges extending in a second direction which intersects with said first direction, said bonding pads being arranged in said first direction;

(2) a substrate having a first surface, a second surface opposite to said first surface, electrode pads formed on said second surface and slit passing through said substrate from said first surface to said second surface and extending in said first direction, said substrate including a glass fiber and resin, said semiconductor pellet being disposed on said first surface of said substrate such that said main surface of said semiconductor pellet is faced to said first surface of said substrate and said bonding pads are arranged in said slit in a plane view, said electrode pads including first electrode pads arranged at one side of said slit and second electrode pads arranged at other side of said slit in said second direction, said bump electrodes being arranged on said second surface of said substrate such that some of said

bump electrodes overlap with said semiconductor pellet in said plane view, respectively;

(3) bonding wires electrically connecting said electrode pads of said substrate with said bonding pads of said semiconductor pellet via said slit, said bonding wires including first bonding wires connected to said first electrode pads and second bonding wires connected to said second electrode pads;

(4) bump electrodes disposed on said second surface of said substrate and electrically connected to said electrode pads of said substrate, said bump electrodes including first bump electrodes electrically connected to said first electrode pads and second bump electrodes electrically connected to said second electrode pads, said first and second bump electrodes being arranged to overlap with said semiconductor pellet in said plane view respectively; and

(5) a resin sealing body sealing the whole of each of said bonding wires and said main surface of said semiconductor pellet exposed from said slit,

(6) wherein a height of said bump electrodes is greater than a thickness of said resin sealing body from said second surface of said substrate toward a top of said bump electrode in a thickness direction of said semiconductor pellet, and

(7) wherein a portion of each of said first and second electrode pads with where each of said first and second bonding wires is connected is arranged between said slit and said first and second bump electrodes, respectively.

110. The semiconductor device according to claim 109, wherein said bonding pads are disposed at a substantially central area between said first pair of opposed edges of said semiconductor pellet.

111. The semiconductor device according to claim 110, wherein said semiconductor pellet has a rectangular shape, and wherein said first pair of opposed edges are corresponding to a pair of longer edges and said second pair of opposed edges are corresponding to a pair of shorter edges.

112. The semiconductor device according to claim 109, wherein said slit is tapered so that opening on said second surface of substrate is greater than opening on said first surface of said substrate.

113. The semiconductor device according to claim 109, wherein said bump electrodes are formed of a Pb-Sn alloy.

114. A semiconductor device comprising:

(1) a semiconductor pellet of a quadrilateral shape having bonding pads formed in a main surface thereof, said semiconductor pellet having a first pair of opposed edges extending in a first direction and a second pair of opposed edges extending in a second direction which intersects with said first direction, said bonding pads being arranged in said first direction;

(2) a substrate having a first surface, a second surface opposite to said first surface, electrode pads formed on said second surface and slit passing through said substrate from said first surface to said second surface and extending in said first direction, said substrate including a glass fiber and resin, said semiconductor pellet being attached to said first surface of said substrate such that said main surface of said semiconductor pellet is faced to said first surface of said substrate and said

bonding pads are arranged in said slit in a plane view, said electrode pads including first electrode pads arranged at one side of said slit and second electrode pads arranged at other side of said slit in said second direction, said bump electrodes being arranged on said second surface of said substrate such that some of said bump electrodes overlap with said semiconductor pellet in said plane view, respectively;

(3) bonding wires electrically connecting said electrode pads of said substrate with said bonding pads of said semiconductor pellet via said slit, said bonding wires including first bonding wires connected to said first electrode pads and second bonding wires connected to said second electrode pads;

(4) bump electrodes being disposed on said second surface of said substrate and being electrically connected to said electrode pads of said substrate, said bump electrodes including first bump electrodes electrically connected to said first electrode pads and second bump electrodes electrically connected to said second electrode pads, said first and second bump electrodes being arranged to overlap with said semiconductor pellet in said plane view respectively; and

(5) a resin sealing body sealing the whole of each of said bonding wires and said main surface of said semiconductor pellet exposed from said slit,

(6) wherein a height of said bump electrodes is greater than a thickness of said resin sealing body from said second surface of said substrate toward a top of said bump electrode in a thickness direction of said semiconductor pellet, and

(7) wherein a portion of each of said first and second electrode pads with where each of said first and second bonding wires is connected is arranged between said slit and said first and second bump electrodes, respectively.

115. The semiconductor device according to claim 114, wherein said substrate is formed of said glass fiber impregnated with said resin.

116. A semiconductor device comprising:

(1) a semiconductor pellet of a quadrilateral shape having bonding pads formed in a main surface thereof, said semiconductor pellet having a first pair of opposed edges extending in a first direction and a second pair of opposed edges extending in a second direction which intersects with said first direction, said bonding pads being arranged in said first direction;

(2) a substrate having a first surface, a second surface opposite to said first surface, electrode pads formed on said second surface and slit passing through said substrate from said first surface to said second surface and extending in said first direction, said substrate including a glass fiber and resin, said semiconductor pellet being attached to said first surface of said substrate by way of an adhesive layer such that said main surface of said semiconductor pellet is faced to said first surface of said substrate and said bonding pads are arranged in said slit in a plane view, said electrode pads including first electrode pads arranged at one side of said slit and second electrode pads arranged at other side of said slit in said second direction, said bump electrodes being arranged on said second surface of said

substrate such that some of said bump electrodes overlap with said semiconductor pellet in said plane view, respectively;

(3) bonding wires electrically connecting said electrode pads of said substrate with said bonding pads of said semiconductor pellet via said slit, said bonding wires including first bonding wires connected to said first electrode pads and second bonding wires connected to said second electrode pads;

(4) bump electrodes being disposed on said second surface of said substrate and being electrically connected to said electrode pads of said substrate, said bump electrodes including first bump electrodes electrically connected to said first electrode pads and second bump electrodes electrically connected to said second electrode pads, said first and second bump electrodes being arranged to overlap with said semiconductor pellet in said plane view respectively; and

(5) a resin sealing body sealing the whole of each of said bonding wires and said main surface of said semiconductor pellet exposed from said slit,

(6) wherein a height of said bump electrodes is greater than a thickness of said resin sealing body from said second surface of said substrate toward a top of said bump electrode in a thickness direction of said semiconductor pellet, and

(7) wherein a portion of each of said first and second electrode pads with where each of said first and second bonding wires is connected is arranged between said slit and said first and second bump electrodes, respectively.

117. The semiconductor device according to claim 116, wherein said substrate is formed of said glass fiber impregnated with said resin.

118. A semiconductor device comprising:

(1) a semiconductor pellet of a quadrilateral shape having bonding pads formed in a main surface thereof, said semiconductor pellet having a first pair of opposed edges extending in a first direction and a second pair of opposed edges extending in a second direction which intersects with said first direction, said bonding pads being arranged in said first direction;

(2) a substrate having a first surface, a second surface opposite to said first surface, electrode pads formed on said second surface, an insulating layer formed over said second surface such that a part of each of said electrode pads is exposed from said insulating layer and slit passing through said substrate from said first surface to said second surface and extending in said first direction, said substrate including a glass fiber and resin, said semiconductor pellet being disposed on said first surface of said substrate such that said main surface of said semiconductor pellet is faced to said first surface of said substrate and said bonding pads are arranged in said slit in a plane view, said electrode pads including first electrode pads arranged at one side of said slit and second electrode pads arranged at other side of said slit in said second direction, said bump electrodes being arranged on said second surface of said substrate such that some of said bump electrodes overlap with said semiconductor pellet in said plane view, respectively;

(3) bonding wires electrically connecting said part of each of said electrode pads of said substrate with said bonding pads of said semiconductor pellet via said slit, said bonding wires including first bonding wires connected to said first electrode pads and second bonding wires connected to said second electrode pads;

(4) bump electrodes being disposed on said second surface of said substrate and being electrically connected to said electrode pads of said substrate, said bump electrodes including first bump electrodes electrically connected to said first electrode pads and second bump electrodes electrically connected to said second electrode pads, said first and second bump electrodes being arranged to overlap with said semiconductor pellet in said plane view respectively; and

(5) a resin sealing body sealing the whole of each of said bonding wires, said part of each of said electrode pads and said main surface of said semiconductor pellet exposed from said slit,

(6) wherein a height of said bump electrodes is greater than a thickness of said resin sealing body from said second surface of said substrate toward a top of said bump electrode in a thickness direction of said semiconductor pellet, and

(7) wherein a portion of each of said first and second electrode pads with where each of said first and second bonding wires is connected is arranged between said slit and said first and second bump electrodes, respectively.

119. The semiconductor device according to claim 118, wherein said substrate is formed of said glass fiber impregnated with said resin.

120. A semiconductor device comprising:

(1) a semiconductor pellet of a rectangular shape having bonding pads formed in a main surface thereof, said semiconductor pellet having a first pair of opposed edges extending in a first direction and a second pair of opposed edges

extending in a second direction which intersects with said first direction, a length of each of said first pair of opposed edges being longer than that of each of said second pair of opposed edges, said bonding pads being arranged along said first direction, said bonding pads being disposed at a substantially central area between said first pair of opposed edges of said semiconductor pellet, a logic circuit system, a memory circuit system or a circuit system combined said logic circuit system and said memory circuit system being formed in said main surface of said semiconductor pellet;

(2) a substrate having a first surface, a second surface opposite to said first surface, electrode pads formed on said second surface and slit passing through said substrate from said first surface to said second surface and extending in said first direction, a width of said slit extending in said second direction being smaller than that of said semiconductor pellet extending in said second direction, said substrate including a glass fiber and resin, said semiconductor pellet being attached to said first surface of said substrate such that said main surface of said semiconductor pellet is faced to said first surface of said substrate and said bonding pads are arranged in said slit in a plane view, said electrode pads including first electrode pads arranged at one side of said slit and second electrode pads arranged at other side of said slit in said second direction, said bump electrodes being arranged on said second surface of said substrate such that some of said bump electrodes overlap with said semiconductor pellet in said plane view, respectively;

(3) bonding wires electrically connecting said electrode pads of said substrate with said bonding pads of said semiconductor pellet via said slit, said bonding wires

including first bonding wires connected to said first electrode pads and second bonding wires connected to said second electrode pads;

(4) bump electrodes being disposed on said second surface of said substrate and being electrically connected to said electrode pads of said substrate, said bump electrodes including first bump electrodes electrically connected to said first electrode pads and second bump electrodes electrically connected to said second electrode pads, said first and second bump electrodes being arranged to overlap with said semiconductor pellet in said plane view respectively; and

(5) a resin sealing body sealing the whole of each of said bonding wires, said first and second electrode pads and said main surface of said semiconductor pellet exposed from said slit,

(6) wherein a height of said bump electrodes is greater than a thickness of said resin sealing body from said second surface of said substrate toward a top of said bump electrode in a thickness direction of said semiconductor pellet, and

(7) wherein a portion of each of said first and second electrode pads with where each of said first and second bonding wires is connected is arranged between said slit and said first and second bump electrodes, respectively.

121. The semiconductor device according to claim 120, wherein said substrate is formed of said glass fiber impregnated with said resin.

122. A semiconductor device comprising:

(1) a semiconductor pellet of a rectangular shape having bonding pads formed in a main surface thereof and formed in a row, said semiconductor pellet having a first pair of opposed edges extending in a first direction and a second pair of opposed edges extending in a second direction which intersects with said first direction, a length of each of said first pair of opposed edges being longer than that of each of said second pair of opposed edges, said bonding pads being arranged along said first direction, said bonding pads being disposed at a substantially central area between said first pair of opposed edges of said semiconductor pellet, a logic circuit system, a memory circuit system or a circuit system combined said logic circuit system and said memory circuit system being formed in said main surface of said semiconductor pellet;

(2) a substrate having a first surface, a second surface opposite to said first surface, electrode pads formed on said second surface and slit passing through said substrate from said first surface to said second surface and extending in said first direction, said substrate including a glass fiber and resin, said semiconductor pellet being attached to said first surface of said substrate such that said main surface of said semiconductor pellet is faced to said first surface of said substrate and said bonding pads are arranged in said slit in a plane view, said electrode pads including first electrode pads arranged at one side of said slit and second electrode pads arranged at other side of said slit in said second direction, said bump electrodes being arranged on said second surface of said substrate such that some of said bump electrodes overlap with said semiconductor pellet in said plane view, respectively;

(3) bonding wires electrically connecting said electrode pads of said substrate with said bonding pads of said semiconductor pellet via said slit, said bonding wires including first bonding wires connected to said first electrode pads and second bonding wires connected to said second electrode pads;

(4) bump electrodes being disposed on said second surface of said substrate and being electrically connected to said electrode pads of said substrate, said bump electrodes including first bump electrodes electrically connected to said first electrode pads and second bump electrodes electrically connected to said second electrode pads, said first and second bump electrodes being arranged to overlap with said semiconductor pellet in said plane view respectively; and

(5) a resin sealing body sealing the whole of each of said bonding wires, said first and second electrode pads and said main surface of said semiconductor pellet exposed from said slit,

(6) wherein a height of said bump electrodes is greater than a thickness of said resin sealing body from said second surface of said substrate toward a top of said bump electrode in a thickness direction of said semiconductor pellet,

(7) wherein a portion of each of said first and second electrode pads with where each of said first and second bonding wires is connected is arranged between said slit and said first and second bump electrodes, respectively, and

(8) wherein a width of said slit extending in said second direction is the substantially same as a diameter of said bump electrode of said substrate.

123. The semiconductor device according to claim 122, wherein said substrate is formed of said glass fiber impregnated with said resin.

124. The semiconductor device according to claim 122, wherein said slit is tapered so that opening on said second surface of substrate is greater than opening on said first surface of said substrate.

125. The semiconductor device according to claim 122, wherein said bonding pads are arranged in said first direction to form single row of bonding pads.

126. The semiconductor device according to claim 104, wherein said bonding pads are arranged in said first direction to form single row of bonding pads.

127. The semiconductor device according to claim 109, wherein at least some of said bonding pads extend in said first direction to form a single row of bonding pads.

128. The semiconductor device according to claim 114, wherein said semiconductor pellet has a rectangular shape, and wherein said first pair of opposed edges are corresponding to a pair of longer edges and said second pair of opposed edges are corresponding to a pair of shorter edges.

129. The semiconductor device according to claim 114, wherein said slit is tapered so that opening on said second surface of substrate is greater than opening on said first surface of said substrate.

130. The semiconductor device according to claim 114, wherein said bonding pads are arranged in said first direction to form single row of bonding pads.

131. The semiconductor device according to claim 116, wherein said semiconductor pellet has a rectangular shape, and wherein said first pair of opposed edges are corresponding to a pair of longer edges and said second pair of opposed edges are corresponding to a pair of shorter edges.

132. The semiconductor device according to claim 116, wherein said slit is tapered so that opening on said second surface of substrate is greater than opening on said first surface of said substrate.

133. The semiconductor device according to claim 116, wherein said bonding pads are arranged in said first direction to form single row of bonding pads.

134. The semiconductor device according to claim 118, wherein said semiconductor pellet has a rectangular shape, and wherein said first pair of opposed edges are corresponding to a pair of longer edges and said second pair of opposed edges are corresponding to a pair of shorter edges.

135. The semiconductor device according to claim 118, wherein said slit is tapered so that opening on said second surface of substrate is greater than opening on said first surface of said substrate.

136. The semiconductor device according to claim 118, wherein said bonding pads are arranged in said first direction to form single row of bonding pads.

137. The semiconductor device according to claim 120, wherein said slit is tapered so that opening on said second surface of substrate is greater than opening on said first surface of said substrate.

138. The semiconductor device according to claim 120, wherein said bonding pads are arranged in said first direction to form single row of bonding pads.